YAMAHATX-

Natural Sound AM/FM Stereo Tuner 40 Station Random Access Preset Tuning Multi-Status Station Memory Preset Station Name Storing Capability Rotary Encoder Tuning with Tuning Lock Direct PLL Synthesizer Tuning 2-Position IF Mode Select Buttons BLEND Button Remote Control Capability (Optional)

Thank you for selecting this YAMAHA stereo tuner





WNER'S MANUAL

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IMPORTANT!

Please make a note of the serial number of this unit in the space indicated below.

Model Serial No

The serial number is inscribed on the rear of the unit.
Keep this Owner's Manual in a safe place

for future reference

To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.



CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER FOR BACK!, NO USER SERVICEABLE PARTS INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Explanation of Graphical Symbols



The tightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



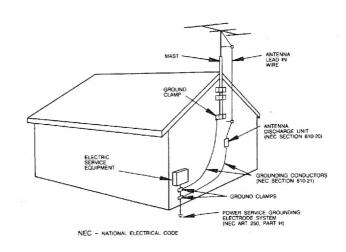
equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

SAFETY INSTRUCTIONS

- **1** Read Instructions All the safety and operating instructions should be read before the unit is operated.
- Retain Instructions The safety and operating instructions should be retained for future reference.
- 3 Heed Warnings All warnings on the unit and in the operating instructions should be adhered to.
- 4 Follow Instructions All operating and other instructions should be followed.
- Water and Moisture The unit should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- 6 Carts and Stands The unit should be used only with a cart or stand that is recommended by the manufacturer.
- **6A** A unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the unit and cart combination to overturn.
- 7 Wall or Ceiling Mounting The unit should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 8 Ventilation The unit should be situated so that its location or position does not interfere with its proper ventilation. For example, the unit should not be situated on a bed, sofa, rug, or similar surface, that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
- 9 Heat The unit should be situated away from heat sources such as radiators, stoves, or other units that produce heat.
- 10 Power Sources The unit should be connected to a power supply only of the type described in the operating instructions or as marked on the unit.
- 11 Power-Cord Protection Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit.
- 12 Cleaning The unit should be cleaned only as recommended by the manufacturer.
- 13 Nonuse Periods The power cord of the unit should be unplugged from the outlet when left unused for a long period of time.
- **14** Object and Liquid Entry Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the unit.
- **15** Damage Requiring Service The unit should be serviced by qualified service personnel when:
- A. The power-supply cord or the plug has been damaged; or
 B. Objects have fallen, or liquid has been spilled into the unit: or
- C. The unit has been exposed to rain; or
- The unit does not appear to operate normally or exhibits a marked change in performance; or
- E. The unit has been dropped, or the cabinet damaged.
- 16 Servicing The user should not attempt to service the unit beyond those means described in the operating instructions. all other servicing should be referred to qualified service personnel.

- 17 Power Lines An outdoor antenna should be located away from power lines.
- **18** Grounding or Polarization Precautions should be taken so that the grounding or polarization is not defeated.
- 19 Outdoor Antenna Grounding If an outside antenna is connected to this unit, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING



Note to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

CAUTION: READ THIS BEFORE OPERATING YOUR UNIT

- 1 This unit is a sophisticated AM/FM stereo tuner. To ensure proper operation for the best possible performance, please read this manual carefully.
- Choose the installation location of this unit carefully. Avoid placing it in direct sunlight or close to a source of heat. Also avoid locations subject to vibration and excessive dust, heat, cold or moisture. Keep it away from such sources of hum as transformers or motors.
- 3 Do not open the cabinet as this might result in damage to the set, or electrical shock. If a foreign object should get into the set, contact your dealer.
- 4 To prevent lightning damage, pull out the power cord and remove the antenna cable during an electrical storm.
- When removing the power plug from the wall outlet, always pull directly on the plug; never pull the cord itself.
- 6 Do not use force when using the switches.

- 7 When moving the set be sure to first pull out the power plug and remove cords connected to other equipment.
- 8 Do not attempt to clean this unit with chemical solvent as this might damage the finish. Use a clean, dry cloth.
- 9 Be sure to read the "Troubleshooting" section for advice on common operating errors before concluding that this unit is faulty.
- 10 Keep this manual in a safe place for future reference.

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

- 2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.
- 3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices.

Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Electronics Corp., U.S.A. 6722 Orangethorpe Ave, Buena Park, CA 90620.

The above statements apply ONLY to those products distributed by Yamaha Corporation of America or its subsidiaries

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the manufacture of this product contains LEAD. In addition, the electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT REMOVE ANY ENCLOSURE COMPONENTS! There are no user serviceable parts inside. All service

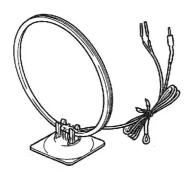
should be performed by a service representative authorized by Yamaha to perform such service.

IMPORTANT MESSAGE: Yamaha strives to produce products that are both user safe and environmentally "friendly". We sincerely believe that our products meet these goals. However, in keeping with both the spirit and the letter of various statutes we have included the preceding messages and others in various locations in this manual.

SUPPLIED ACCESSORIES

After unpacking, check that the following parts are contained.

AM Loop Antenna/Indoor FM Antenna



Audio connection cord

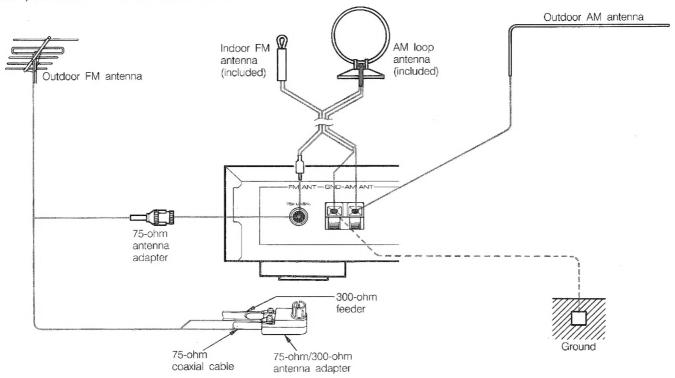


CONNECTIONS

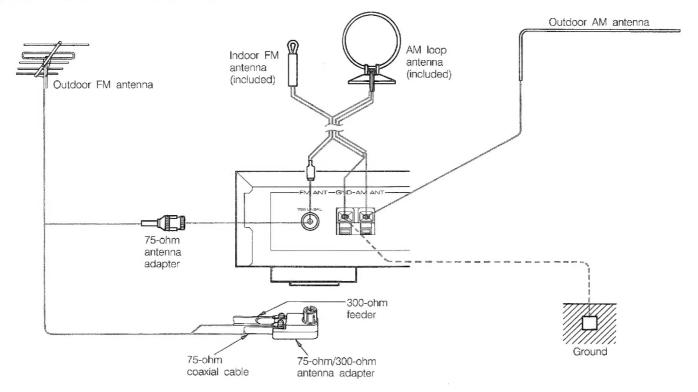
ANTENNA CONNECTIONS

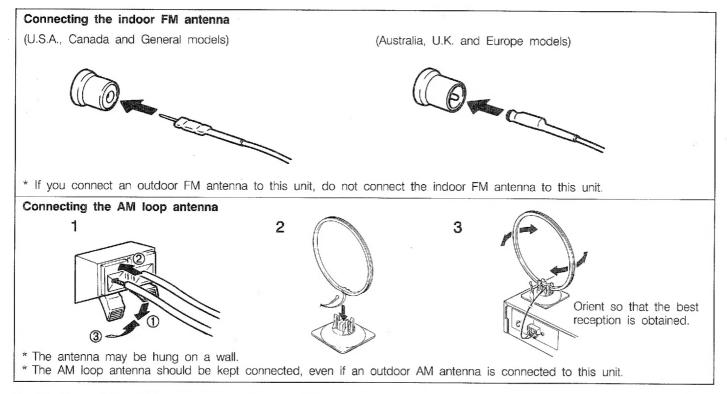
- Each antenna should be connected to the designated terminals correctly, referring to the following figure.
 Both AM and FM indoor antennas are included with this unit. In general, these antennas will probably provide sufficient signal strength. Nevertheless, a properly installed outdoor antenna will give clearer reception than an indoor one. If you experience poor reception quality, an outdoor antenna may result in improvement.

U.S.A., CANADA AND GENERAL MODELS



AUSTRALIA, U.K. AND EUROPE MODELS





Positioning of the AM loop antenna/indoor FM antenna

After the connections, place the indoor FM antenna to the position where the best reception is obtained, and next, orient the AM loop antenna so that the best reception is obtained. However, if the orientation of the AM loop antenna moves the prepositioned indoor FM antenna, you can separate the antennas with your hands easily and place each antenna to the best position.

Optional outdoor FM antenna

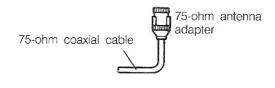
Consult with your dealer or authorized service center about the best method of selecting and erecting an outdoor FM antenna.

The choice of the feeder cable is also important. Flat ribbon-shaped twin-lead cable performs well electrically, and is cheaper and somewhat easier to handle when routing it through windows and around rooms. Coaxial cable is more expensive, does a much better job of minimizing interference, is less prone to the effects of weather and close-by metal objects, and is nearly as good a signal conductor as feeder cable, particularly for foam-type coaxial cables. Coaxial cable is somewhat more difficult to install at the point where the cable enters the building. If coaxial cable is selected, make sure the antenna is designed to be used with that type of cable.



* Use a 75-ohm/300-ohm antenna adapter (not included) or a 75-ohm antenna adapter (not included) for connections.

300-ohm feeder cable 75-ohm coaxial cable 75-ohm/300-ohm antenna adapter



Notes for FM antenna installation

- To minimize automobile ignition noise, locate the antenna as far from heavy traffic as possible.
- Keep the feeder cable or coaxial cable as short as possible. Do not bundle or roll up excess cable.
- The antenna should be at least two meters (6.6 feet) from reinforced concrete walls or metal structures.

M Optional outdoor AM antenna

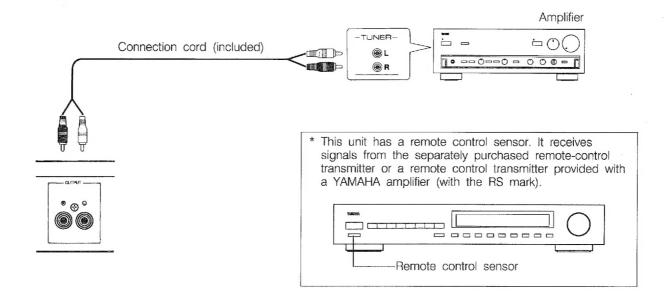
In steel buildings or at a great distance from the transmitter, it may be necessary to install an outside long wire antenna.

GND terminal

For maximum safety and minimum interference, connect the **GND** terminal to a good earth ground. A good earth ground is a metal stake driven into moist earth.

CONNECTIONS TO THE AMPLIFIER

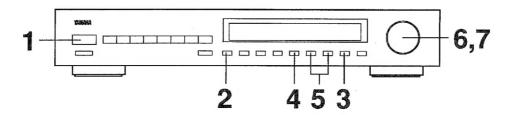
- Before making any connections, switch OFF the power to this unit and the amplifier or other component.
- Be sure that the connections from the left ("L") and right ("R") OUTPUT terminals are connected to the corresponding (left and right) input terminals of the amplifier or other component.

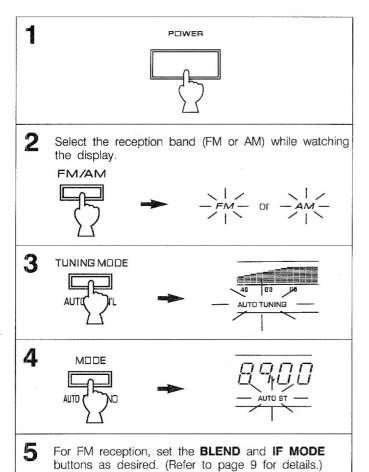


TUNING OPERATIONS

Normally, if station signals are strong and there is no interference, quick automatic-search tuning (AUTOMATIC TUNING) is possible. However, if signals of the station you want to select are weak, you must tune to it manually (MANUAL TUNING).

AUTOMATIC TUNING





Tune to a desired station.



To tune to a higher frequency, slightly turn the control to the right. To tune to a lower frequency, slightly turn the control to the left.

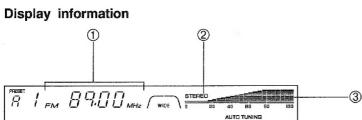
If the station where tuning search stopped is not the desired one, follow step 6 again.



* If the tuning search does not stop at the desired station, change to the MANUAL TUNING method as described on the following page.

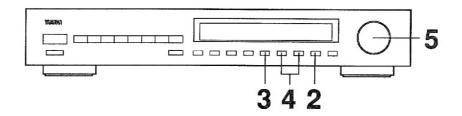
Note

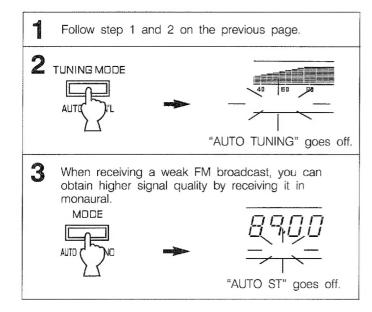
Be sure to set the **LOCK** button so that "LOCK" does not illuminate on the display. Otherwise, the **TUNING** control will not function. (Refer to page 9 for details.)

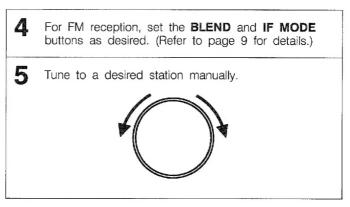


- 1 Displays the band and frequency of the received station. 2 Illuminates when an FM stereo broadcast with sufficient
- signal strength is received.
- 3 Indicates the signal level of the received station.

MANUAL TUNING



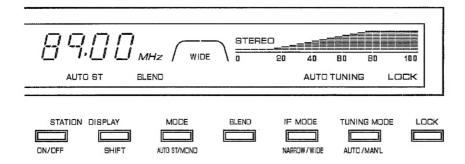




Note

Be sure to set the **LOCK** button so that "LOCK" does not illuminate on the display. Otherwise, the **TUNING** control will not function. (Refer to page 9 for details.)

Other functions to improve reception signal quality



IF MODE buttons

These buttons are used to vary the bandpass of the FM intermediate frequency (IF) between WIDE and NARROW.

If the reception signal is strong, press this button so that the "WIDE" indicator illuminates (to obtain distortion-free sound). When the reception signal is weak, or when the desired station is interfered with by adjacent stations, press this button so that the "NARROW" indicator illuminates (to increase the selectivity).



BLEND button

If this button is set so that the "BLEND" indicator illuminates, and the signal-to-noise ratio of a stereo signal is less than about 50 dB, the left and right channels are blended accordingly to make the reception signal quality higher. When the **MODE AUTO ST/MONO** button is set to the monaural mode (so that the "AUTO ST" indicator does not illuminate), the BLEND function will not operate even if the BLEND indicator illuminates.



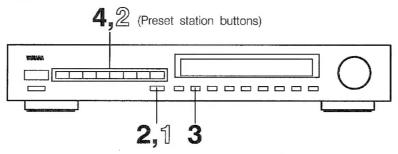
LOCK button

This button is used to lock-in the frequency of the broadcast, so that drift-free FM reception is possible. Press this button so that the LOCK indicator illuminates, and the displayed frequency will be locked-in, even if there are changes in the temperature and/or humidity. This function is particularly useful when making a long FM broadcast recording.

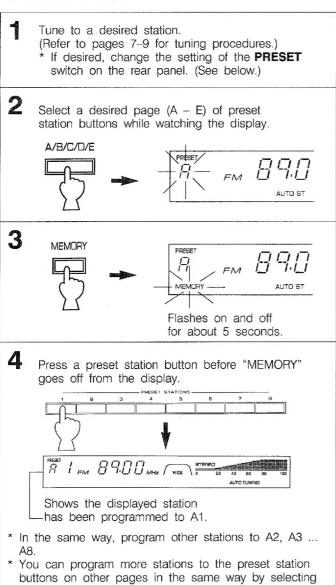
* The preset stations can be received by using the preset station buttons even if the LOCK indicator illuminates. Press this button so that the LOCK indicator switches off when receiving a weak FM broadcast, especially when there is an adjacent strong station interfering with the desired station.

PRESET TUNING

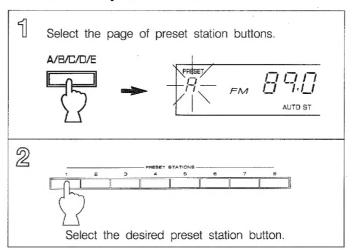
This unit can store station frequencies (selected by tuning operation) by using the preset station buttons. With this function, you can select any desired station by only pressing the corresponding preset station button. Up to 40 stations (8 stations per page) can be stored.



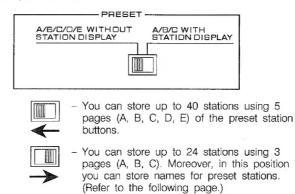
To store stations



To recall a preset station



About the PRESET switch on the rear panelSet the **PRESET** switch on the rear panel to a desired position when the power of this unit is off.



* The design of the switch is different for general models.

Notes

other pages in step 2.

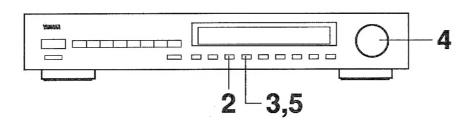
- For FM reception, the settings of the MODE, BLEND and IF MODE buttons (and optionally the station names) are stored along with the station frequency.
- A new setting can be programmed in place of the former one.
- The **PRESET** switch can be switched only when the power of this unit is off.

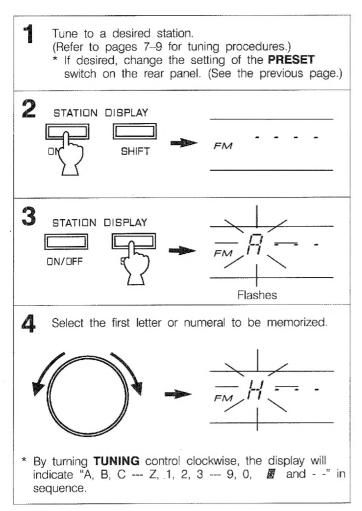
To store stations with name

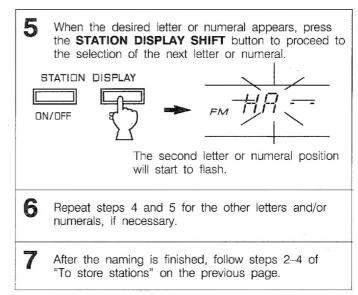
You can preset a station by name instead of by frequency. As many as 4 letters and/or numerals can be selected. By using a station name, you can easily find a certain station even if you are not sure of that station's frequency.

* However, this function is available only when the **PRESET** switch on the rear panel is set to "A/B/C WITH STATION"

DISPLAY". (Note that, in this case, the maximum number of stations you can store is 24.)







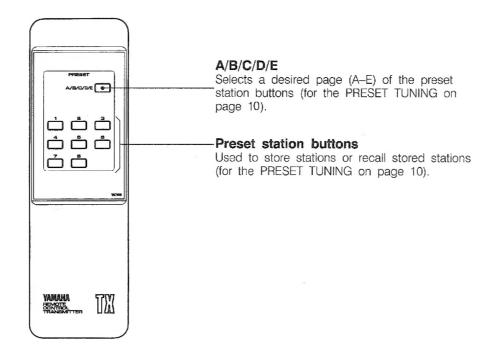
Memory back-up

The memory back-up circuit prevents the programmed data from being lost even if the POWER switch is set off or the power plug is disconnected from the AC outlet or the power is cut due to temporary power failure. If, however, the power is cut for more than one week, the memory may be erased. If so, it can be re-programmed by simply following the PRESET TUNING steps.

REMOTE CONTROL TRANSMITTER

(separate purchase)

Functions



Battery installation

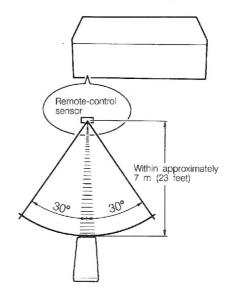
Battery replacement

If the remote-control transmitter must be used closer to the main unit, the batteries are weak. Replace both batteries with new ones.

Notes:

- Use only "AA" (R6) batteries for replacement.
 Be sure the polarities are correct. (See the illustration inside the battery compartment.)
- Remove the batteries if the remote-control transmitter will not be used for an extended period of time.
- If batteries leak, immediately dispose of them. Avoid touching the leaked material or letting it come in contact with clothing, etc. Clean the battery compartment thoroughly before installing new batteries.

Remote-control transmitter operation range



Notes

- There should be no large obstacles between the remotecontrol transmitter and the main unit.
- If the remote control sensor is directly illuminated by strong lighting (or an inverter type of fluorescent lamp etc.), it may happen that the remote-control transmitter does not work correctly. In this case, change the position of the main unit to avoid being lit directly.

TROUBLESHOOTING

If the unit fails to operate normally, check the following points to determine whether the fault can be corrected by the simple measures suggested. If it cannot be corrected, or if the fault is not listed in the SYMPTOM column, disconnect the power cord and contact your authorized YAMAHA dealer or service center for help.

	SYMPTOM	CAUSE	REMEDY
	ackling sounds from time to time (especially weak signal areas).	Ignition noise from passing vehicles.	The FM antenna should be put up as high as possible, away from the road, and a coaxial cable used.
		Noise from thermostats or other electrical equipment.	Attach a noise suppressor to the equipment causing the noise.
FIV	I stereo reception is noisy.	Because of the characteristics of FM stereo broadcasts, this is limited to cases where the transmitter is far away or the antenna input is poor.	Check the antenna connections. Try using a multiple element FM antenna. Set the TUNING MODE button to the manual tuning mode.
	e STEREO indicator flickers and reception is isy.	Insufficient antenna input.	Use an antenna appropriate for the reception condition in your area.
		Not tuned correctly.	Tune again.
	ere is distortion and clear reception cannot obtained even with a good FM antenna.	There is multi-path interference.	Adjust antenna placement to eliminate multi-path interference.
No	stereo effect even with a stereo broadcast.	The TUNING MODE button is set to the manual tuning mode.	Set the button properly.
1,000	desired station cannot be tuned in with tomatic tuning.	The station is too weak.	Use the manual tuning mode. Set the IF MODE NARROW/WIDE button correctly. Use a high quality directional FM antenna.
	eviously preset stations can no longer be ned in.	The tuner has been unplugged for a long period.	Repeat the presetting procedure.
Ins	sufficient sensitivity.	Weak signal or loose antenna connections.	Tighten the AM loop antenna connections and rotate it for best reception.
1440000	desired station cannot be tuned in with tomatic tuning.		Use the manual tuning mode.
	ere are continuous crackling and hissing ises.	These noises result from lightning, fluorescent lamps, motors, thermostats and other electrical equipment.	Use an outdoor antenna and a ground wire. This will help somewhat but it is difficult to eliminate all noise.
	ere are buzzing and whining noises specially in the evening).	Another station is interfering with the received station.	This is impossible to remedy.
		A television set is being used nearby.	Move the television away.
The	e remote-control transmitter does not work.	Direct sunlight or lighting (of an inverter type of flourescent lamp etc.) is striking the remote control sensor of the main unit.	Change position of the main unit.

SPECIFICATIONS

FM SECTION Signal-to-Noise Ratio [Except Europe model] (IHF)
[Except Europe model] (IHE)
[Loops Larope medel] (iiii)
Tuning Range Mono
[U.S.A., Canada and General models] Stereo
[U.K., Australia, Europe and General models] Mono (40 kHz Dev.)
50 dB Quieting Sensitivity (IHF) [Except Europe Harmonic Distortion (1 kHz, WIDE)
model] [Except Europe model]
75 ohms Mono
75 ohms Stereo (NARROW) 21 μV (37.7 dBf) [Europe model (40 kHz Dev.)]
Usable Sensitivity Mono/Stereo
[Except Europe model] Stereo Separation (WIDE)
75 ohms, 1 kHz, 100% mod. (30 dB S/N [Except Europe model]
Quieting)
[Europe model] (DIN) Frequency Response
75 ohms Mono (S/N 26 dB) 0.8 μV [Except Europe model]
75 ohms Stereo (S/N 46 dB)
Image Response Ratio 20 Hz to 15 kHz
[Except Europe model]
[Europe model]
IF Response Ratio
[Except Europe model]
[Europe model]
Spurious Response Ratio
AM Suppression Ratio
Capture Ratio
Alternate Channel Selectivity (NARROW) [U.K., Australia and Europe models]
[Except Europe model] 85 dB 531 to 1,611 kHz
Selectivity (two signals, 40 kHz Dev., ±300 kHz, Usable Sensitivity
NARROW) Selectivity
[Europe model] 70 dB

[Europe model] (DIN-NOISE RMS)
Mono (40 kHz Dev.)
Stereo (40 kHz Dev.)
Harmonic Distortion (1 kHz, WIDE)
[Except Europe model]
Mono/Stereo 0.02%/0.03%
[Europe model (40 kHz Dev.)]
Mono/Stereo
Stereo Separation (WIDE)
[Except Europe model]
[Europe model]
Frequency Response
[Except Europe model]
30 Hz to 13 kHz 0±0.5 dB
20 Hz to 15 kHz 0±1.5 dB
[Europe model]
20 Hz to 15 kHz
20 112 to 10 10 10 12
AM SECTION
Tuning Range
[U.S.A., Canada and General models]
[U.K., Australia and Europe models]
Usable Sensitivity
Selectivity

Signal-to-Noise Ratio50 dBImage Response Ratio40 dBSpurious Response Ratio50 dBHarmonic Distortion; 400Hz0.3%
AUDIO SECTION
Output Level/Impedance FM (100 % mod. 1 kHz) [Except Europe model]
GENERAL
Power Supply U.S.A. and Canada models 120V, 60 Hz Europe model 230V, 50 Hz U.K. and Australia models 240V, 50 Hz General model 110-120/220-240V, 50/60 Hz Power Consumption 10W Dimensions (W x H x D) 435 x 72.5 x 320 mm (17-1/8" x 2-7/8" x 12-5/8") Weight 3.1 kg (6 lbs. 13 oz.) Accessories Audio connection cord AM loop antenna/indoor FM antenna
Specifications subject to change without notice.

YAMAHA

YAMAHA ELECTRONICS CORPORATION, USA 6722 ORANGETHORPE AVE., BUENA PARK, CALIF. 90620, U.S.A.
YAMAHA CANADA MUSIC LTD. 135 MILNER AVE., SCARBOROUGH, ONTARIO M1S 3R1, CANADA
YAMAHA ELECTRONIK EUROPA G.M.b.H. SIEMENSSTR. 22-34, D-2084 RELLINGEN BEI HAMBURG, F.R. OF GERMANY
YAMAHA ELECTRONICIOE RANCE S.A. 17 RUE DES CAMPANJUES, LOGNES 77321 MARINE LA VALLEE CEDEX 2, FRANCE
YAMAHA ELECTRONICIOS (UK) LTD. YAMAHA HOUSE. 200 RICKMANSWORTH ROAD WATFON, HERTS WOT 13S, ENGLAND
YAMAHA SCANDINAVIA A.B. J A WETTERGRENS GATA 1, BOX 30053, 400 43 VÄSTRA FRÖLUNDA, SWEDEN
YAMAHA MUSIC AUSTRALIA PTY, LTD. 17-33 MARKET ST., SOUTH MELBOURNE, 3205 VIC., AUSTRALIA